

WHAT IS CLAIMED IS:

1. An augmented scanning display apparatus, comprising:

a source of image light;

a scanner which scans the image light;

5 a beamsplitter which receives the image light and which further receives background light.

a lensing system which passes the image light and background light as exiting light

10 a signal source responsive to the background light which varies a wavefront curvature of the image light to correlate a focal distance to the background light.

2. The apparatus of claim 1, in which the signal source varies wavefront curvature of the exiting light to correlate exiting light focal distance relative to the background light.

15 3. The apparatus of claim 1, further comprising a distance sensor which detects distance of an object within a background field of view from which the background light is received, and wherein the signal source is responsive to the received background light from the object and varies the wavefront curvature of the exiting light to correlate relative to the detected distance of the object.

20 4. The apparatus of claim 1, in which the signal source varies wavefront curvature of the exiting light to display a first virtual object at a first apparent distance and to display a second virtual object at a second apparent distance.

5. A scanning display apparatus, comprising:

a source of image light;

a scanner which scans the image light;

30 a lensing system which passes the image light as exiting light; and

a control signal which adjusts the lensing system to achieve a first wavefront curvature of the exiting light during a first portion of a field of view and

to achieve a second wavefront curvature during a second portion of the field of view.

5           6.       The apparatus of claim 5, in which the first portion of the field of view corresponds to a first virtual object at a first apparent distance and the second portion of the field of view corresponds to a second virtual object at a second apparent distance.

10           7.       The apparatus of claim 5, further comprising a beamsplitter which receives the image light and which further receives background light, and in which the lensing system passes the image light and background light as the exiting light.

15           8.       The apparatus of claim 7, in which the first portion of the field of view corresponds to a first virtual object at a first apparent distance and the second portion of the field of view corresponds to a second virtual object at a second apparent distance.

20           9.       An augmented scanning display apparatus, comprising:  
a source of image light;  
a scanner which scans the image light;  
a beamsplitter which receives the image light and which further receives background light;  
a lensing system which passes the image light and background light as exiting light;  
25           an eye tracker which detects eye position of a viewer;  
a controller receiving an indication of the detected eye position, the controller generating a signal to vary wavefront curvature of the exiting light based upon the tracked eye position.

30           10.      The Apparatus of claim 9, in which the generated signal fixes the focal distance of the exiting light to a first focal distance during a first portion of a field of view and fixes the focal distance to a second focal distance during a

second portion of the field of view.

11. An augmented scanning display apparatus, comprising:

a source of image light;

5 a scanner which scans the image light;

a beamsplitter which receives the image light and which further receives background light.

a lensing system which passes the image light and background light as exiting light

10 means for varying wavefront curvature of the exiting light based upon an aberration map.

12. A scanning display apparatus, comprising:

a source of image light;

15 an image signal controlling the light source to generate a first light pattern for a first virtual object and a second light pattern for a second virtual object;

a scanner which scans the image light;

a lensing system which passes the image light as exiting light;

20 a signal source which varies wavefront curvature of the exiting light to position a first virtual object at a first apparent distance and to position a second virtual object at a second apparent distance.

13. The apparatus of claim 12, further comprising:

25 a beamsplitter which receives the image light and which further receives background light, wherein the lensing system passes the image light and background light as the exiting light;

a sensor for detecting depth of the background light; and

30 a signal source responsive to detected depth which varies wavefront curvature of the image light for the first virtual object to correlate the first apparent distance to a first detected depth of the background light and which varies the wavefront curvature of the image light for the second virtual object to correlate the second apparent distance to a second detected depth of the background light.